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AS

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/462,387 04/19/00 DANIEL

M A32851-PCTU

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IM22/0626

EXAMINER

SHOSHO, C

ART UNIT

PAPER NUMBER

1714

10

DATE MAILED:

06/26/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

# Office Action Summary

Application No.  
09/462,387

Applicant(s)  
Daniel et al.

Examiner  
Calli Shosho

Art Unit  
1714



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1) ☒ Responsive to communication(s) filed on Apr 16, 2001

2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

## Disposition of Claims

4) ☒ Claim(s) 13 and 15-27 is/are pending in the application.

4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.

6) ☒ Claim(s) 13 and 15-27 is/are rejected.

7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.

8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirements.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a) ☐ All b) ☐ Some\* c) ☐ None of:

- ☐ Certified copies of the priority documents have been received.
- ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
- ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). \_\_\_\_\_
- 18) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: \_\_\_\_\_

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**DETAILED ACTION**

1. All outstanding rejections are overcome by applicants' amendment filed 4/16/01. Further, the substitute specification has been entered in light of applicants statement as to lack of new matter in the new specification and as well as submission of a marked up copy and a clean copy of the new specification.

The following rejection is non-final, however, in light of the use of new references against the claims, namely, Hojo (U.S. 5,939,493) and Araki et al. (U.S. 4,939,484).

**Claim Rejections - 35 USC § 103**

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 13 and 15-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jalics et al. (U.S. 5,708,053).

Jalics et al. disclose a sulfur vulcanized rubber composition comprising (i) 100 parts rubber such as polybutadiene, solution polymerized styrene-butadiene, polyisoprene, and EPDM, (ii) 10-150 phr silica wherein silica is the only filler present in the composition, (iii) up to 4 phr sulfur containing organosilicon, identical to that presently claimed, which links silica and polymer, (iv) 0.05-3 phr guanidine, and (v) 0.5-4 phr free amine. Based on the above amounts, it is calculated that the composition contains approximately 3-40% sulfur containing organosilicon,

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0.03-30% guanidine, and 0.3-40% amine all calculated on the weight of silica. It is further disclosed the composition is suitable for use in a tire tread composition. Jalics et al. further disclose a method wherein the polymer is prepared in solution, stopping the polymerization, stripping solvent, and then adding amine (col.1, lines 35-44, col.2, lines 28-39 and 56-63, col.6, line 64-col.8, line 18, col.8, lines 37-39 and 44-47, col.9, lines 1-3, 11-61, and example 3). Although there is no explicit disclosure that the amine is homogeneously dispersed in the composition, given that the amine is mixed with the other ingredients in the composition for several minutes, it is clear that intrinsically the amine is homogeneously dispersed in the composition.

The difference between Jalics and the present claimed invention is the requirement in the claims of specific type of amine

Jalics et al. broadly disclose the use of amines, but there is no explicit disclosure of aliphatic amine or cycloaliphatic amine as presently claimed.

However, one of ordinary skill in the art would have recognized that the broad disclosure of amine in Jalics et al. encompasses the use of aliphatic amine or cycloaliphatic amine, and that, absent evidence to the contrary, it would have been within the skill level of, as well as obvious to, one of ordinary skill in the art to choose aliphatic amine or cycloaliphatic amine as the particular amine, and thereby arrive at the claimed invention.

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4. Claims 13, 15-22, and 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hojo (U.S. 5,939,493) in view of Jalics et al. (U.S. 5,708,053).

Hojo discloses a sulfur vulcanized rubber composition comprising (i) 100 parts rubber such as polybutadiene, styrene-butadiene, and polyisoprene, (ii) 15-85 phr silica, (iii) 1-15%, based on the amount of silica, of silane coupling agent identical to that presently claimed, and (iv) 1-15%, based on the amount of silica, of free tertiary amine such as trioctylamine. It is further disclosed the composition is suitable for use in a tire tread and sidewall composition (col.6, lines 6-22, col.8, lines 30-32 and 57-62, col.9, lines 23-52, and col.10, lines 4-7).

The difference between Hojo and the present claimed invention is the requirement in the claims of guanidine.

Hojo discloses the use of vulcanization accelerators, but there is no explicit disclosure of guanidine.

Jalics et al., which is drawn to rubber composition disclose the use of 0.05-3 phr accelerator such as guanidine including diphenylguanidine in order to control the time and temperature required for vulcanization as well as improve the properties of the vulcanizate (col.8, lines 61-63 and col.9, lines 1-3 and 15-17). Using this amount of guanidine in the rubber composition of Hojo, it is calculated that the guanidine is present in an amount of 0.6-20% based on the amount of silica.

In light of the motivation for using guanidine described by Jalics et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use guanidine in

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the rubber composition of Hojo in order to control the time and temperature required for vulcanization as well as improve the properties of the vulcanizate, and thereby arrive at the claimed invention.

5. Claims 13, 15-22 and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakafutami et al. (U.S. 5,804,644) or Halasa et al. (U.S. 5,534,592) either of which in view of either Hojo (U.S. 5,939,493) or Araki et al. (U.S. 5,939,484).

Nakafutami et al. disclose a sulfur vulcanized rubber composition comprising (i) 100 parts rubber such as polybutadiene, styrene-butadiene, isoprene rubber, and styrene-butadiene-isoprene, (ii) 10-150 phr silica, (iii) 0.1-20 phr coupling agent, identical to that presently claimed, which links silica and polymer, and (iv) 1.5 phr guanidine. Based on the above amounts, it is calculated that the composition contains 0.07-200% coupling agent and 1-15% guanidine calculated on the weight of silica. Even more specifically, it is disclosed that the composition contains 8-11% coupling agent and 2.5-7.5% guanidine, and that the filler contains 44-100% silica. It is further disclosed the composition is suitable for use in a tire tread composition (col.3, lines 43-55, col.6, lines 18-23, 35-44, and 62-64, col.7, lines 5-17, col.8, lines 34-42, col.13, lines 54-58, and Table 6).

Alternatively, Halasa et al. disclose a sulfur vulcanized rubber composition comprising (i) 100 parts rubber such as polybutadiene and styrene-butadiene, (ii) 10-250 phr silica, (iii) 0.01-1 parts sulfur containing organosilicon based on the amount of silica, identical to that presently

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claimed, which links silica and polymer, and (iv) 0.1-2.5 phr guanidine. It is disclosed that the composition contains 100% silica. Based on the above amounts, it is calculated that the composition contains approximately 1-100% sulfur containing organosilicon and 0.04-25% guanidine calculated on the weight of silica. Even more specifically, it is disclosed that the composition contains, for instance, 15% sulfur containing organosilicon and 3% guanidine calculated on the weight of silica. It is further disclosed the composition is suitable for use in a tire tread composition (col.8, line 65-col.10, line 4, col.12, lines 47-54, col.13, lines 8-16, and example 12).

The difference between either Nakafutami et al. or Halasa et al. and the present claimed invention is the requirement in the claims of free amine.

Hojo, which is drawn to rubber composition suitable for use in tires, disclose the use of 1-15%, based on the amount of silica, of tertiary amine such as trioctylamine in order to improve resistance to heat aging and abrasion (col.9, lines 30-59).

Alternatively, Araki et al., which is drawn to rubber composition suitable for use in tires, disclose the use of 1-15%, based on the amount of silica, of amine such as C<sub>1</sub>-C<sub>36</sub> alkyl amine in order to improve the dispersion of silica (col.3, lines 14-16, col.4, lines 1-16, and col.7, lines 17-18 and 55-67).

In light of the motivation for using amine compound disclosed by either Hojo or Araki et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such amine in the rubber composition of either Nakafutami et al. or Halasa et al. in order to

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produce composition with improved resistance to heat aging and abrasion or alternatively, to improve dispersion of silica, and thereby arrive at the claimed invention.

6. Claims 13, 15-21 and 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bomal et al. (U.S. 6,140,393) in view of either Hojo (U.S. 5,939,493) or Araki et al. (U.S. 5,939,484).

Bomal et al. disclose a sulfur vulcanized rubber composition comprising (i) 100 parts rubber such as polybutadiene and styrene-butadiene, (ii) silica wherein silica is the only filler present in the composition, (iii) sulfur containing organosilicon, identical to that presently claimed, which links silica and polymer, and (iv) guanidine. It is further disclosed the composition is suitable for use in a tire casing composition (col.1, lines 8-12, col.15, lines 1-5, col.15, line 61-col.16, line 26, and example 5). Based on example 5, it is calculated that the composition contains approximately 5% sulfur containing organosilicon and 2% guanidine, calculated on the weight of silica.

The difference between Bomal et al. and the present claimed invention is the requirement in the claims of free amine.

Hojo, which is drawn to rubber composition suitable for use in tires, disclose the use of 1-15%, based on the amount of silica, of tertiary amine such as trioctylamine in order to improve resistance to heat aging and abrasion (col.9, lines 30-59).



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Alternatively, Araki et al., which is drawn to rubber composition suitable for use in tires, disclose the use of 1-15%, based on the amount of silica, of amine such as C<sub>1</sub>-C<sub>36</sub> alkyl amine in order to improve the dispersion of silica (col.3, lines 14-16, col.4, lines 1-16, and col.7, lines 17-18 and 55-67).

In light of the motivation for using amine compound disclosed by either Hojo or Araki et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such amine in the rubber composition of Bomal et al. in order to produce composition with improved resistance to heat aging and abrasion or alternatively, to improve dispersion of silica, and thereby arrive at the claimed invention.

#### **Response to arguments**

7. Applicants' arguments filed 4/16/01 have been fully considered but they are not persuasive.

Specifically, applicants argue that:

(a) No disclosure in Jalics et al. of free aliphatic or cycloaliphatic amine as presently claimed.

(b) No disclosure in Nakafutami et al., Halasa et al., or Bomal et al. of free aliphatic or cycloaliphatic amine as presently claimed.

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With respect to argument (a), it is noted that Jalics et al. broadly disclose the use of amines, but there is no explicit disclosure of aliphatic amine or cycloaliphatic amine as presently claimed.

However, one of ordinary skill in the art would have recognized that the broad disclosure of amine in Jalics et al. encompasses the use of aliphatic amine or cycloaliphatic amine, and that, absent evidence to the contrary, it would have been within the skill level of, as well as obvious to, one of ordinary skill in the art to choose aliphatic amine or cycloaliphatic amine as the particular amine, and thereby arrive at the claimed invention.

With respect to argument (b), it is agreed that Nakafutami et al., Halasa et al., or Bomal et al. do not explicitly disclose the use of free aliphatic or cycloaliphatic amine as presently claimed, which is why each of these references is now used in combination with either Hojo or Araki et al.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie Shosho whose telephone number is (703) 305-0208. The examiner can normally be reached on Mondays-Thursdays from 7:00 am to 4:30 pm. The examiner can also be reached on alternate Fridays.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan, can be reached on (703) 306-2777. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-3599.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

CA

Callie Shosho

6/25/01

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